COMMENTS AND RESPONSE

In view of the comments below, Applicants respectfully requests that the Examiner reconsider the present application including rejected claims 1-15, as amended, and withdraw the claim rejections.

Cited Documents

The Examiner noted that the documents cited on February 13, 2001, fail to comply with 37 C.F.R. § 1.98(a)(2). Applicants assume that the Examiner refers to the information disclosure statement filed November 6, 2000, identifying a number of co-pending applications owned by the assignee in the present case. Applicants acknowledge that this citation has been placed in the application file, but that the information therein has not been considered.

The Examiner also noted that a listing of documents in the specification is not a proper information disclosure statement under 37 C.F.R. 37 § 1.98(b). Applicants acknowledge that unless any documents cited in the specification appear on a form PTO-892, they have not been considered by the Examiner.

Objection to the Specification

The Examiner objected to the specification based on a number of informalities. In particular, the Examiner required the status of cited applications be updated. Specifically, the Examiner required that the designation "XX/XXX,XXX" be replaced with the correct application serial number as appropriate. By this response the applicants have made the appropriate amendments to fill in all known serial numbers.

The Examiner also requested that the source of the reference Lathi be given. In response to this, applicants respectfully submit that Lathi has been properly identified. Lathi refers to the

text book "Modern Digital and Analog Communications Systems," authored by Lathi and published by Holt, Rinehart, and Winston in 1988. All of this identifying information is given in the specification on page 8, lines 17-18, where Lathi is first cited.

For at least the reasons given above, applicants submit that all of the informalities noted by the Examiner have been corrected. Applicants therefore respectfully request that the Examiner withdraw the objection to the specification.

Objection to the Claims

The Examiner has objected to claims 1-15 because of an informality. In particular, the Examiner requested that the term "UWB" be clarified to show that it stands for ultra-wideband."

In response to this objection, applicants have amended claims 1, 8, and 15 to replace the term UWB with "ultra wide bandwidth." Support for this amendment comes, for example, on page 2, line 26, of applicants' specification. No new matter has been added by these amendments. In addition, since these amendments simply spell out specifically what the abbreviation "UWB" stands for, they do not alter the scope of the claims in any way.

For at least the reasons given above, applicants respectfully request that the Examiner withdraw the objection to claims 1-15.

Rejection Under Richards et al. and Raphaeli et al.

The Examiner has rejected claims 1-6, 8-13, and 15 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Richards et al. (United States Patent No. 6,556,621) in view of Raphaeli et al. (United States Patent No. 6,614,864). Applicants respectfully traverse this rejection.

Claims 1, 8, and 15 are each directed to a phase identifying method or system in which transmitted signals are made up of pulses that are spaced a constant distance from each other. In particular, each recites that adjacent pulses in an incoming signal arrive, occur, or are generated "at a predetermined interval." In an effort to better recite this feature, applicants have amended claims 1, 8, and 15 to recite that adjacent incoming pulses arrive, occur, or are generated "at a fixed interval," rather than "at a predetermined interval." This clarifies the claims to show that they are directed to pulses that are formed at substantially the same distance from each other.

In contrast, Richards et al. discloses an impulse radio in which pulse position modulation is used. In an impulse radio, the pulses vary in distance from each other on a pulse-by-pulse basis. (See, e.g., Richards et al. column 4, lines 28-31.) "Impulse radio," as described in Richards et al., and further defined in the cited prior art only uses pulse position modulation. (see e.g., Richards et al., column 1, lines 17-52.) In fact, the most recent patent cited as fully describing impulse radio notes that "[a]mplitude and frequency/phase modulation are unsuitable for this particular form of impulse communications; the only suitable choice is pulse position modulation, which allows the use of a matched filter (i.e., cross correlator) in the receiver." (see, Fullerton, Unites States Patent No. 5,832,035, column 6, lines 22-26.)

So, although Richards et al. states generally that phase modulation has been proposed (see, Richards et al., column 6, lines 42-51), it offers no teaching or suggestion of how that phase modulation can be achieved. In particular, it provides no teaching or suggestion that pulses be generated at a fixed interval.

Nothing in Raphaeli et al. provides a suggestion that incoming pulses of an ultra wide bandwidth signal arrive by a fixed interval.

Thus, nothing in Richards et al. or Raphaeli et al., alone or in combination, discloses or suggests the features recited in claims 1, 8, and 15 noted above.

Claims 2-6 depend from claim 1 and are allowable for at least the reasons given above for claim 1. Claims 9-13 depend from claim 8 and are allowable for at least the reasons given above for claim 1.

Claims 2 and 9, as amended, specifically recite that "the fixed interval is the time between pulses." Nothing in Richards et al. or Raphaeli et al., alone or in combination, discloses or suggests a fixed interval. Therefore, they cannot disclose or suggest that such an interval be the time between pulses.

Claims 3 and 10 specifically recite that "the incoming pulses are at least one of bi-phase modulated and quadrature phase modulated." Nothing in Richards et al. or Raphaeli et al., alone or in combination, discloses or suggests this feature. Although as the Examiner notes, Richards et al. does disclose that "phase modulation" has been proposed, this does not disclose or suggest the specifically recited feature that at least one of bi-phase modulation or quadrature phase modulation be used. No specific details at all are provided regarded the general comment regarding phase modulation.

Applicants note that despite the fact that the pulses are recited as being "at a fixed interval," these claims should not be interpreted as precluding minor variances in pulse separation caused by normal system jitter. However, the pulse separation should be substantially the same.

Based on at least the reasons given above, Applicants respectfully request that the Examiner withdraw the rejection of claims 1-6, 8-13, and 15 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Richards et al. in view of Raphaeli et al.

Rejection Under Richards et al., Raphaeli et al., and Kaku

The Examiner has rejected claims 7 and 14 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Richards et al. in view of Raphaeli et al., and further in view of Kaku (United States Patent No. 5,812,593). Applicants respectfully traverse this rejection.

Claim 7 recites "finding a first maximum," "analyzing the correlation function to find a second maximum that exceeds the first maximum," and "searching a region around the second maximum to determine if the second maximum is a true maximum," Similarly, claim 14 recites "a location mechanism configured to find a first peak," a correlation analysis mechanism configured to analyze the correlation function in order to find a second maximum to exceed the first maximum," and "a search mechanism configures to search an area around the second maximum to determine if the second maximum is a true maximum." This feature is shown by way of example in applicants' first, second, and third modes of fast synchronization. (See, e.g., applicants' specification, page 21, line 12, through page 22, line 20, and Fig. 6).

As shown in the description of this three mode process of fast synchronization, a first peak is found, then a second peak is found, then minor phase adjustments are made around the phase corresponding to correlation value K' to ensure that the correlation maximum, and not a sidelobe or off-peak value, has been found. Therefore, this process requires both finding two separate peaks, *then* searching the area around the second peak to find out if it is a true maximum.

In contrast, Kaku discloses a system in which a search processing control section determines a correlation result as a peak value by comparing a correlation result output from the search correlator with immediately preceding correlation results chosen from a group of succeeding values. This is done to identify a initial peaks as a plurality of sequential correlation

results are determined on an initial pass through the receiver, however, not to examine the area around an existing maximum. (See, e.g., Kaku, column 7, lines 4-52.)

Nothing in Kaku, however, discloses or suggests any further analysis once a peak has already been found any additional searching be performed in the area around an identified second maximum. In fact, nothing in Kaku discloses or suggests that a second maximum be identified at all. Once the first pass has been done, Kaku does not suggest further processing of the identified peak values.

Thus, nothing in Richards et al., Raphaeli et al., or Kaku, alone or in combination, discloses or suggests the features recited in claims 7 and 14 noted above. Therefore, for at least the reasons given above, Applicants respectfully request that the Examiner withdraw the rejection of claims 7 and 14 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Richards et al. in view of Raphaeli et al., and further in view of Kaku.

Amendment to the Specification

Applicants have amended the specification to note that it relies for priority on U.S. provisional application serial nos. 60/207,225 and 60/217,099. This is in accordance with the Declaration and Power of Attorney filed on February 7, 2001. No new matter has been added by this amendment.

New Claims

By this amendment, Applicants have added new claims 16 and 17, which depend from claims 1 and 8, respectively. Claim 16 recites that "the local pulses are generated at the fixed interval, but at a variable phase with respect to the incoming pulses." Similarly, claim 17 recites

that "the local pulses generated by the signal generator are generated at the fixed interval but at a variable phase with respect to the incoming pulses."

Support for these amendments comes, for example, from page 19, lines 16-32 of applicants' specification. No new matter has been added by these new claims.

Applicants respectfully request that the Examiner consider these new claims.

Correction of Filing Receipt

On February 21, 2001, Applicants submitted a request for Corrected Official Filing Receipt. In this request, Applicants requested correction of a typographical error in one of the inventor's names (changing it from "Timothy K. Miller" to "Timothy R. Miller"), and requested correction of incorrect priority information. Applicants respectfully request notification of the status of this request.

Conclusion

Accordingly, Applicants respectfully submit that the claims, as amended, clearly and patentably distinguish over the cited references of record and as such are deemed allowable. Such allowance is hereby earnestly and respectfully solicited at an early date. If the Examiner has any suggestions, comments, or questions, calls are welcome at the telephone number below.

Although it is not anticipated that any additional fees are due or payable, the Commissioner is hereby authorized to charge any fees that may be required to Deposit Account No. **50-1147**.

Respectfully Submitted,

Brian C. Altmiller
Reg. No. 37,271

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Posz & Bethards, PLC
11250 Roger Bacon Drive
Suite 10
Reston, VA 20190
Phone (703) 707-9110
Fax (703) 707-9112
Customer No. 23400